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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/761,223	01/22/2004	Hiroyuki Fukunaga	OKI.616	2739
20987	7590	05/17/2005	EXAMINER	
VOLENTINE FRANCO, & WHITT PLLC ONE FREEDOM SQUARE 11951 FREEDOM DRIVE SUITE 1260 RESTON, VA 20190			KEBEDE, BROOK	
			ART UNIT	PAPER NUMBER
			2823	

DATE MAILED: 05/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/761,223

Applicant(s)

FUKUNAGA, HIROYUKI

Examiner

Brook Kebede

Art Unit

2823

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 May 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 is/are pending in the application.
- 4a) Of the above claim(s) 3 and 4 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 2 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Art Unit: 2823

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Species I, i.e., Claims 1 and 2, in the reply filed on May 10, 2005 is acknowledged.
2. Accordingly, claims 3 and 4 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected Species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on May 10, 2005.

Claim Objections

3. Claims 1 and 2 objected to because of the following informalities:

Claims 1 and 2 recite the limitation "the first step," "the second step," "the third step," "the fourth step," and "the fifth step" throughout the claim. However, the recited limitations lack a proper antecedent basis. It is respectfully submitted that it can be corrected by changing "the" to --a--. Appropriate correction is required.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chiu et al. (US/4,514,897) in view of Fujii et al. (US/5,017,979).

Re claims 1 and 2, Chiu et al. disclose A method of manufacturing a nonvolatile semiconductor storage device, comprising: the first step of successively forming a first insulating

Art Unit: 2823

film (23) and a first polysilicon layer (13) on a semiconductor substrate (20); patterning the first polysilicon layer (13) and the first insulating (23) film into the shape of a band; thermally oxidizing the patterned band-shaped first polysilicon layer (13), thereby to form a second insulating film (24) which is thicker at side surfaces of the first polysilicon layer (13) than at the front surface thereof; forming a second polysilicon layer (14) on a front surface of the resulting semiconductor substrate formed with the second insulating film (24); performing patterning so as to form each storage element of the nonvolatile semiconductor storage device as includes the first insulating film (23), a floating gate electrode made of the first polysilicon layer (13), the second insulating film (24), and a control gate electrode made of the second polysilicon layer (14) (see Figs. 2, 5a-5f, and 7 and related text in Col. 2, line 40 – Col. 8, line 15).

However, Chiu et al. do not specifically disclose implanting nitrogen ions into a front surface of the first polysilicon layer.

Fujii et al. disclose a method of fabricating nonvolatile memory device the method includes forming the first polysilicon layer (42) on the first insulating layer (40) and implanting of the first polysilicon layer with nitrogen ion in order to form a barrier layer that blocks impurities from the polysilicon layer (see Fujii et al. Fig. 14A and Col. 10, lines 18-27).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of applicant(s) claimed invention was made to provide Chiu et al. reference with implanting nitrogen ions into a front surface of the first polysilicon layer as taught by Fujii et al. order to form a barrier layer that blocks impurities from the polysilicon layer.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure Choi et al. (US/5,208,175) and Yamauchi (US/5,510,284) also disclose similar inventive subject matter.

Correspondence

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brook Kebede whose telephone number is (571) 272-1862. The examiner can normally be reached on 8-5 Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on (571) 272-1855. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Brook Kebede
Examiner
Art Unit 2823

BK
May 13, 2005